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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,067	03/31/2004	Steven T. Fink	244568US6YA	4640

22850 7590 06/02/2006

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
SHARP, JEFFREY ANDREW	

ART UNIT	PAPER NUMBER
3677	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/813,067	FINK, STEVEN T.	
	Examiner	Art Unit	
	Jeffrey Sharp	3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *13 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19,21-36,38-43 and 48-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,21-36,38-43 and 48-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on *4/12/2005 and 3/31/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

[1] This action is responsive to Applicant's remarks/amendment filed on 13 March 2006 with regard to the Official Office action mailed on 13 December 2005.

Status of Claims

[2] Claims 1-19, 21-36, 38-43, 48-55 are pending.

Claim Rejections - 35 USC § 112

[3] The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[4] Claim 54 was previously rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has successfully addressed the issue of indefiniteness in the amendment filed on 13 March 2006. Accordingly, the rejection of claim 54 under 35 U.S.C. 112, second paragraph has been withdrawn.

New Grounds of Rejection Necessitated by Amendment

Claim Rejections - 35 USC § 112

[5] Claims 21 and 22 are currently rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are dependent upon a cancelled claim (claim 20).

Claim Rejections - 35 USC § 103

[6] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

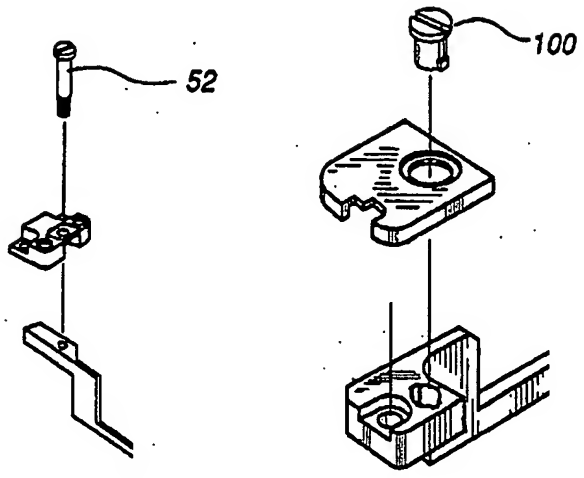
[7] Claims 1-8, 12-15, 23-25, 29-32, 38, 39, and 48-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US, 5,332,443, Lemelson US-5,456,406, and Lynn US-2003/0180556 A1.

Applicant suggests that it is already known to connect a gas inject plate to an electrode plate via a bolt and nut fastening component.

However, the prior art disclosed by Applicant fails to disclose expressly, a (quarter-turn or the like) fastening component to fix a gas inject plate to an electrode plate; said fastening component having a stem, orthogonal locking pin, and a first and second surface (e.g. portion of a head) -- at least one of said first or second surfaces being at least one made of or coated with a material that is highly resistant to erosion resulting from plasma processing, wherein said stem and locking pin are not made from or coated with said material.

Chew suggests advantageously replacing bolts (52) in process chambers with a quarter-turn fastening component (100) or the like for facilitating and expediting replacement. The fastening component taught by Chew has a first or second surface at least one made of or coated with a material highly resistant to erosion.

US-5,332,443 to Chew



Prior Art Improvement

Lynn discloses in paragraph [0011], that a major erosion problem exists for internal components (e.g., screws, nuts, bolts) within plasma reactor equipment, especially those components not made from a resistant material. Lynn, therefore, broadly suggests coating all such metal fasteners found within plasma reactor equipment with ceramic and other suitable dielectric materials.

Lemelson suggests improving the strength and corrosion/erosion properties of metal fasteners by coating "ALL, OR SELECT PORTIONS" of the surface with a material highly resistant to erosion. In a sense, Lemelson's disclosure would "fill in the gaps", where Lynn is silent, in that portions not influenced by erosive environments are not required to be at least one made of or coated with a material highly resistant to corrosion, and that only desired portions of the fastener may be coated according to preference of strength.

Therefore, at the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the prior art plasma process chamber assembly disclosed by Applicant (Figure

5), by advantageously replacing the bolt with a quarter-turn fastening component having a stem and pin as suggested by Chew, in order to *"allow the quarter-turn screw 100... to be removed easily"* and to allow rapid disassembly of the two plate components. It would have further been obvious at the time of invention, from Chew's disclosure, to employ at least a first or second surface of said fastening component (i.e., any "head" surface of fastener 100) being at least one made of or coated with a material highly resistant to plasma chamber erosion, since Chew discloses at least the head to be made from erosion-resistant ceramic.

Moreover, in view of the Lynn and Lemelson references, it would also have been obvious to one of ordinary skill in the art, at the time of invention, to make/coat all or only those portions of the fastener exposed to harsh environments. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller, 642 F. 2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).* In this regard, a conclusion of obviousness may be based on common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. *In re Bozek, 416 F .2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).*

Examiner notes that within the present disclosure (particularly paragraph 0020), Applicant suggests many alternative, but *apparently* equivalent embodiments, only one of them being the presently claimed embodiment. Applicant has not pointed out the criticality in not coating the stem and pin portion over coating the entire fastener (as suggested by Lynn) or

making the entire fastener from a resistant material (as suggested by Chew). Regardless, Lemelson suggests only coating selected portions of a fastener according to preference and utility. Examiner takes the position that one of ordinary skill in the art would immediately recognize that portions of a fastener not *directly* exposed to harsh plasma environments would not need to be coated in an effort to save coating material costs; however, those areas could be coated for extra erosion prevention, or to improve the overall strength of the fastener (as evidenced by Lemelson). Examiner invites Applicant to submit convincing evidence supporting the *criticality of not providing* an erosion-resistant material to the stem and pin to overcome the above prima facie case of obviousness, since it appears from the disclosure that there is no criticality.

Claims 6, 7, 14, 15 have been treated as product by process claims. The determination of patentability in a product-by-process claim is based on the product itself, even though the claim may be limited and defined by the process. That is, the product in such a claim is unpatentable if it is the same as or obvious from the product of the prior art, even if the prior product was made by a different process. *In re Thorpe, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985).* A product-by-process limitation adds no patentable distinction to the claim, and is unpatentable if the claimed product is the same as a product of the prior art. A comparison of the recited process with the prior art processes does NOT serve to resolve the issue concerning patentability of the product. *In re Fessman, 489 F2d 742, 180 USPQ 324 (CCPA 1974).* Whether a product is patentable depends on whether it is known in the art or it is obvious, and is not governed by whether the process by which it is made is patentable. *In re Klug, 333 F.2d 905, 142 USPQ 161 (CCPA 1964).* In an ex parte case, product by process claims are not construed as being limited

to the product formed by the specific process recited. *In re Hirao et al., 535 F.2d 67, 190 USPQ 15, see footnote 3 (CCPA 1976).*

[8] Claims 9-11 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443, Lemelson US-5,456,406, and Lynn US-2003/0180556 A1 as discussed above, in even further view of Bowers 175-5,795,122 or Csik et al. U5-2003/0185657.

Applicants admission in view of Chew, Lemelson, and Lynn would clearly suggest the limitations of claims 8 and 30, but appear to be silent as to obvious/well-known modifications to a quarter-turn type fastening component.

Bowers suggests a solution, which compensates for varying plate thicknesses by putting the second contacting surface on an adjustable, moveable, externally threaded member to be contained (i.e., "inserted") within a threaded bore of a second plate. From the teachings of Bower, one of ordinary skill in the art would recognize and appreciate the advantages of making the second contact surface infinitely axially adjustable with respect to the second object to eliminate the need for closely matched fastening components. See Bowers, Col 2 lines 5-13, 24-39.

Csik et al. likewise, suggests a second contacting surface communicating with an orthogonally-positioned pin at the end of a stem of a fastening component, said second contacting surface being provided with an external helical thread so as to provide a means for axially adjusting and positioning said second contacting surface. This axially adjustable contacting surface eliminates the need for using differently sized fastening components for a

given range of thicknesses for the panels being fastened.

Therefore, at the time of invention, it would have been obvious to one of ordinary skill in the art from the teachings of either Bowers or Csik et al., to modify the second contacting surface taught by Applicant and Chew, by employing a second fastening component having an external thread-gripping means (i.e., 'locking element') in order to provide a means for axial adjustment -- said means allowing a standard sized stem to be used to fasten two plates of varying thicknesses (e.g., two plates having a thickness slightly out of tolerance).

[9] Claims 16-19, 26, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443, Lemelson US-5,456,406, and Lynn US-2003/0180556 A1 as discussed above, in even further view of David et al. U5-6,267,543.

Applicants admission in view of Chew, Lemelson, and Lynn would clearly suggest the limitations of claims 8, 23, and 30, but appear to be silent of a restricting/stopping element (e.g., pin) that prevents over-rotation of the quarter-turn fastening component, and silent of a helical coil locking element which would restrict movement between a contacting surface and the electrode plate.

David et al. suggests restricting elements (140,142), which prevent over-rotation of a quarter-turn fastening component. In fact, the examiner takes official notice that most conventional quarter turn fastening component assemblies incorporate some kind of rotation restricting feature or positive locking feature, since a rotation of 180 degrees would allow the quarter turn fastener to be removed. This may be disadvantageous, especially when a good

connection is desired, and when high vibration environments risk accidental rotation of the fastening component.

David et al. further suggests a locking element in the form of a helical coil (122) that would restrict movement between all parts of the assembly.

Therefore, at the time of invention, it would have been obvious to one of ordinary skill in the art, to employ a restricting element (pin) so as to prevent over-rotation of the quarter-turn fastening component, and/or to prevent accidental disassembly which would occur might the fastener be rotated too far (e.g., multiples of 180 degrees).

It would have further been obvious, from David et al.'s disclosure, to employ a locking element in the form of a helical coil within a quarter turn fastening assembly, in order to restrict movement between essentially all parts of the assembly.

[10] Claims 18, 19, 27, 28, and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443, Lemelson US-5,456,406, and Lynn US-2003/0180556 A1 as discussed above, in even further view of Campbell et al. U5-6,468,925.

Applicants admission in view of Chew, Lemelson, and Lynn would clearly suggest the limitations of claims 8, 23, and 30, but appears to be silent of an electrically conductive elastic element/locking element between the gas inject plate and the electrode.

Campbell et al. suggests an electrically conductive elastic locking element (40) positioned between a gas inject plate and electrode, so as to advantageously provide "good RF electrical contact" between the two plates," which "is highly desirable to achieve good and

consistent deposition when processing a series of wafers within the chamber", especially when "the showerhead support electrode and the showerhead are typically made of dissimilar materials".

Therefore, at the time of invention, it would have been obvious to modify the assembly suggested by Applicants admission in view of Chew, Lemelson, and Lynn, to further comprise an electrically conductive elastic element/locking element between a gas inject plate and electrode as suggested by Campbell et al., in order to provide good RF electrical contact and a consistent deposition, especially if the plates are made of dissimilar materials.

Response to Arguments/Remarks

[11] Claims 1-8, 12-15, 20-25, 29-32, 38, 39, 48-53 and 55 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of U.S. Patent No. 5,332,443 to Chew. Claims 9-11 and 34-36 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Chew, and further in view of U.S. Patent No. 5,795,122 to Bowers or U.S. Patent Publication 2003/0185653 to Csik et al. Claims 16-19, 26 and 33 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Chew, and further in view of U.S. Patent No. 6,267,543 to David et al. Claims 18, 19, 27, 28 and 40-43 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Chew and further in view of U.S. Patent No. 6,468,925 to Campbell et al.

Applicant's arguments/remarks with regard to this reference have been fully considered,

but are moot in view of the new grounds of rejection presented herein, which are necessitated by amendment.

Examiner notes that amended claim 8 is still obvious in view of Applicant's admission and Chew alone. This is because claim 8 does not positively state that the stem and pin are not made of or coated with a material highly resistant to corrosion. The amendment merely states that another portion of the fastening component (e.g., head, first surface, second surface) other than the stem and pin must comprise the material, which Chew shows.

Conclusion

[12] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

See form PTO-892.

[13] Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

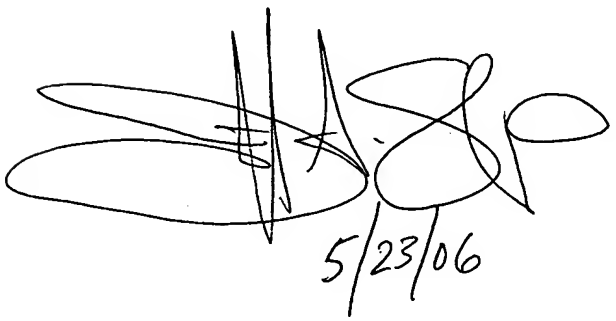
CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

[14] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAS



ROBERT J. SANDY
PRIMARY EXAMINER